Constant Rates of Change Worksheet

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Fill in the blanks for the following
2. Place numbers next to each to order the following salaries from smallest to largest salary:
   1. 7 dollars per 3 hours
   2. 3 dollars per half hour
   3. 2 dollars per 0.25 hour
   4. 32 dollars per 8-hour day
   5. 320 dollars per 40-hour week
   6. 9 dollars per 0.75 hours
3. For each row, express the salary with the indicated salary units.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Salary | Dollars per hour | Dollars per ½ hour | Dollars per 3 hours | Dollars per 8-hour day |
| $6 per 5 hours |  |  |  |  |
| $2 dollars per half hour |  |  |  |  |
| $3 dollars per 0.25 hour |  |  |  |  |
| $72 dollars per 8-hour day |  |  |  |  |
| $320 dollars per 40-our week |  |  |  |  |
| $6 per 0.6 hours |  |  |  |  |

1. Which units for salaries are most practical in Problems 2 and 3? Why?
2. Given that

*x = number of minutes displayed on an ongoing timer*

*y = f(x) = gallons of liquid in a tank*

If we assume a constant flow of liquid for each row, fill in the following table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *(x1,y1)* | *(x2,y2)* | Gallons per minute | Gallons per 1/60 of a minute (gal/sec) | Gallons per 60 minutes (gal/hour) |
| (2,9) | (5,15) |  |  |  |
| (3,45) | (13,125) |  |  |  |
| (2,34) | (7,64) |  |  |  |
| (2,30) | (4,36) |  |  |  |

1. Given that

*x = hours that have gone by since 12:00*

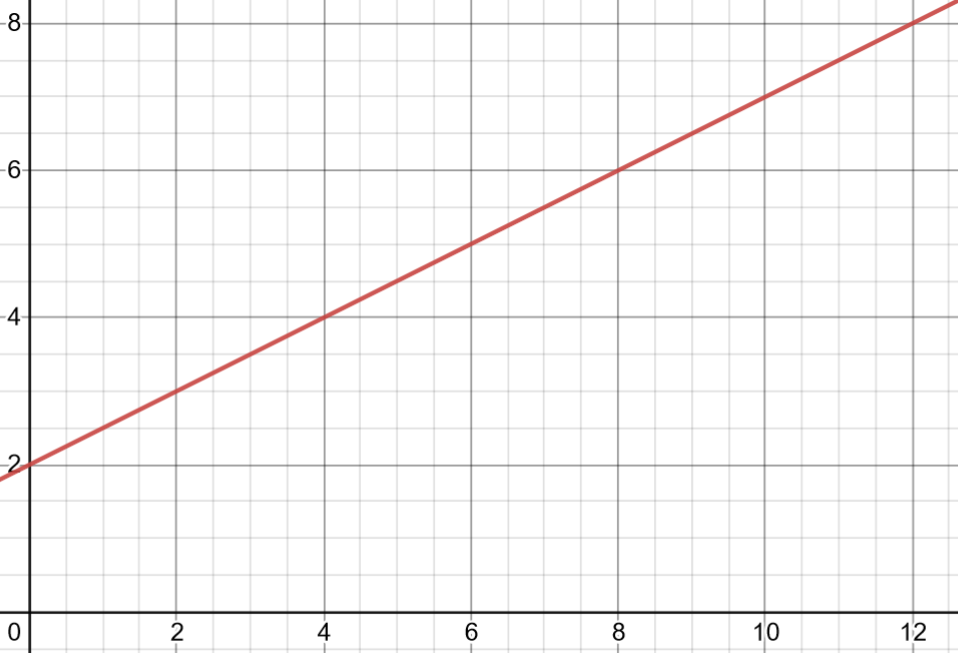
*y = f(x) = mile marker on the highway that represents our location*

If the first column contains the formula for *f*, fill in the following table with two points (x1,y1) and (x2,y2) that will let us find each of the associated velocities in the given column:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Formula | Two points for miles per hour | 2 pts for miles per ½ hour | 2 pts for miles per 5 hours | 2 pts for miles per 24-hour day |
| *y = 10x* |  |  |  |  |
| *y = 25x* |  |  |  |  |
| *y = 15x + 12* |  |  |  |  |
| *y = 30x + 36* |  |  |  |  |
| *y = 20x +`300* |  |  |  |  |
| *y = 3x + 4* |  |  |  |  |

use the results of the above table to express the velocity of each row in the units indicated for the given columns:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Formula | Velocity in miles per hour | Velocity in miles per ½ hour | Velocity in miles per 5 hours | Velocity in miles per 24-hour day |
| *y = 10x* |  |  |  |  |
| *y = 25x* |  |  |  |  |
| *y = 15x + 12* |  |  |  |  |
| *y = 30x + 36* |  |  |  |  |
| *y = 20x +`300* |  |  |  |  |
| *y = 3x + 4* |  |  |  |  |



1. Given that

*x = hours that have passed since 12:00 noon*

*y = f(x) = mile marker on the highway that represents our location*

If the above graph represents the function *f*, fill in the following table with two points (x1,y1) and (x2,y2) that will let us find each of the associated velocities in the given column:

|  |  |  |  |
| --- | --- | --- | --- |
| Two points for miles per hour | 2 pts for miles per ½ hour | 2 pts for miles per 5 hours | 2 pts for miles per 8-hour work day |
|  |  |  |  |

Use the results of the previous table to express the velocity of each row in the units indicated for the given columns:

|  |  |  |  |
| --- | --- | --- | --- |
| Velocity in miles per hour | Velocity in miles per ½ hour | Velocity in miles per 5 hours | Velocity in miles per 8 hour work day |
|  |  |  |  |

1. Optional:
   1. Create a situation (with associated x and y variables) so that there is an associated slope equal to 4. Be sure to include the units of x and y when describing the situation.
   2. Create, a table of values, a formula and a graph that can represent this same situation.
   3. Find sets of two points associated with the situation where
   4. For part bi,ii and iii, does the slope change? Why or why not?